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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

MOON, SEOKYUN

ART UNIT

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/695,813	<b>Applicant(s)</b> LIOU ET AL.	
	<b>Examiner</b> SEOKYUN MOON	<b>Art Unit</b> 2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 12 May 2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,4,7 and 9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,4,7, and 9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |                                                                                      |                                                                   |
|--------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____                                                          | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### *Response to Arguments*

1. The Applicant's arguments filed on May 12, 2009 have been fully considered.

Regarding the claim limitation newly added in the independent claim 1, the Applicant asserts [Remarks: pg 4 1<sup>st</sup> full paragraph] that figure 4 and page 4 lines 14-16 of the original specification of the instant Application support the newly added claim limitation, "*wherein one of the plurality of control signal lines transmits a time sequence of the encoded data, while the other one of the plurality of control signal lines transmits a time sequence for controlling input/output of the encoded data*".

Examiner respectfully disagrees.

Examiner agrees with the Applicant that the "*signal control line 232*" is the data line transmitting encoded data, based on the description of the "*signal control line 232*" disclosed in page 4 lines 14-15 of the original specification, but respectfully disagrees with the Applicant that figure 4 and page 4 lines 14-16 of the specification support the limitation, "*the other one of the plurality of control signal lines transmits a time sequence for controlling input/output of the encoded data*". Page 4 lines 14-16 of the specification merely defines the "*control signal line 231*" as an address line. However, defining the "*control signal line 231*" as "*address line*" is not sufficient for one of ordinary skill in the art to construe the "*control signal line 231*" to transmit a time sequence for controlling input/output of the encoded data. Also, figure 4 merely supports that the "*signal control line 231*" transmits a time sequence of data, but does not specify what type of data the

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"*signal control line 231*" transmits. Accordingly, Examiner respectfully submits that the cited figure and part of the original specification do not support the newly added claim limitation.

Appropriate correction/explanation is required.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. **Claims 1, 4, 7, and 9** are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

As to **claim 1**, the claim discloses, "*while the other one of the plurality of control signal lines transmits a time sequence for controlling input/output of the encoded data*".

However, Examiner respectfully submits that none of the figures and the specification of the current Application support the claim limitation.

For further examination purpose, the claim will be interpreted in two different ways (one with the above claim limitation which is not supported by the specification and one without the above claim limitation which is not supported by the specification).

Appropriate explanation/correction is required.

As to **claims 4, 7, and 9**, the claims are rejected as being dependent upon the base claim rejected under 35 U.S.C. 112, first paragraph.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. **Claims 1, 4, and 7** are rejected under 35 U.S.C. 102(e) as being anticipated by Lee (US 2003/0085859).

As to **claim 1**, Lee teaches a driving circuit [fig. 1] for solving color dispersion [par. (0008) lines 1-3; generating separate sets of gamma reference voltages for respective R, G, and B colors prevents color dispersion], implemented in a flat panel display (“LCD”) [par. (0008) lines 1-3] with a plurality of pixel cells (the pixels included in the LCD), the driving circuit comprising:

a coding unit (“*timing controller*”) [par. (0027) lines 1-5], to generate a plurality of encoded data (“*digital gamma data*”) according to a plurality of characteristic curves (gamma curves);

a reference voltage generator (a combination of “*gamma register 100*” and “*gamma reference voltage generator 200*”) [fig. 2], to receive the encoded data (“*digital*

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*gamma data*") [par. (0027) lines 1-5], convert the encoded data from digital to analog [par. (0027) lines 5-9], and generate a plurality of reference voltages; and

a driving unit ("*10*") [fig. 1], to receive the reference voltages and accordingly drive the display cells;

wherein the plurality of characteristic curves are gamma curves respectively for three primary colors R, G, B [par. (0008)], and the coding unit generates the plurality of encoded data according to the gamma curves respectively for the three primary colors R, G, B at the same time [par. (0032) lines 1-5] (It is noted that digital gamma data for respective R, G, and B colors are obtained based on gamma curves for respective R, G, and B);

wherein the reference voltage generator (a combination of "*gamma register 100*" and "*gamma reference voltage generator 200*") [fig. 2] comprises: a plurality of sample/latch circuits (the two sets of storing means included in the "*gamma register 100*", wherein one set of the storing means corresponds to "+" signal processing means and another set of the storing means corresponds to "-" signal processing means) [fig. 2] having inputs connected to the coding unit ("*timing controller*") [par. (0027) lines 1-5] and arranged to receive the encoded data and apply the encoded data received to a plurality of digital-to-analog converters (the D/A converter units "*210*" and "*240*" included in "*gamma reference voltage generator 200*") [fig. 3], each digital to analog converter being respectively connected to one of the sample/latch circuits by a plurality of control signal lines [fig. 3], to perform digital to analog conversion according to the encoded

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data which is outputted by the sample/latch circuit and received by the control signal lines, thereby obtaining the reference voltages;

wherein one of the plurality of control signal lines transmits a time sequence of the encoded data [par. (0032) lines 1-5].

As to **claim 4**, Lee [fig. 2] teaches each digital-to-analog converter inputting the encoded data through the plurality of control signal lines.

As to **claim 7**, Lee teaches the driving unit being a data driver ("*data driver 10*") [fig. 1].

### ***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. **Claims 1, 4, 7, and 9** are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee.

As to **claim 1**, Lee teaches a driving circuit [fig. 1] for solving color dispersion [par. (0008) lines 1-3; generating separate sets of gamma reference voltages for respective R, G, and B colors prevents color dispersion], implemented in a flat panel display ("*LCD*") [par. (0008) lines 1-3] with a plurality of pixel cells (the pixels included in the LCD), the driving circuit comprising:

a coding unit ("*timing controller*") [par. (0027) lines 1-5], to generate a plurality of encoded data ("*digital gamma data*") according to a plurality of characteristic curves (gamma curves);

a reference voltage generator (a combination of "*gamma register 100*" and "*gamma reference voltage generator 200*") [fig. 2], to receive the encoded data ("*digital gamma data*") [par. (0027) lines 1-5], convert the encoded data from digital to analog [par. (0027) lines 5-9], and generate a plurality of reference voltages; and

a driving unit ("*10*") [fig. 1], to receive the reference voltages and accordingly drive the display cells;

wherein the plurality of characteristic curves are gamma curves respectively for three primary colors R, G, B [par. (0008)], and the coding unit generates the plurality of encoded data according to the gamma curves respectively for the three primary colors R, G, B at the same time [par. (0032) lines 1-5] (It is noted that digital gamma data for respective R, G, and B colors are obtained based on gamma curves for respective R, G, and B);

wherein the reference voltage generator (a combination of "*gamma register 100*" and "*gamma reference voltage generator 200*") [fig. 2] comprises: a plurality of sample/latch circuits (the two sets of storing means included in the "*gamma register 100*", wherein one set of the storing means corresponds to "+" signal processing means and another set of the storing means corresponds to "-" signal processing means) [fig. 2] having inputs connected to the coding unit ("*timing controller*") [par. (0027) lines 1-5] and arranged to receive the encoded data and apply the encoded data received to a



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plurality of digital-to-analog converters (the D/A converter units "210" and "240" included in "*gamma reference voltage generator 200*") [fig. 3], each digital to analog converter being respectively connected to one of the sample/latch circuits by a plurality of control signal lines [fig. 3], to perform digital to analog conversion according to the encoded data which is outputted by the sample/latch circuit and received by the control signal lines, thereby obtaining the reference voltages;

wherein one of the plurality of control signal lines transmits a time sequence of the encoded data [par. (0032) lines 1-5].

Lee does not teach that the other one of the plurality of control signal lines transmits a time sequence for controlling input/output of the encoded data.

However, Examiner takes Official Notice that it is well known in the art to control digital-to-analog converters by using a clock signal which controls the timings of operating other electronic components (Note that how Lee as modified by this well known concept would teach the claim limitation is explained below).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the digital-to-analog converters of Lee to receive the clock signal synchronized to other electronic components such as "*gamma register 100*" of Lee by connecting the digital-to-analog converters to the signal line carrying the clock signal and to be synchronized with the clock signal, in order to prevent mistiming of processing the encoded data and thus to prevent any image degradation caused by such mistiming (Note that it is inherent for a register to receive a clock signal).

Lee as modified above teaches that a control signal line (the signal line carrying the clock signal, which is connected to both of the "*gamma register 100*" and the "*gamma reference voltage generator 200*") transmits a time sequence for controlling input/output of the encoded data.

As to **claim 4**, Lee [fig. 2] teaches each digital-to-analog converter inputting the encoded data through the plurality of control signal lines.

As to **claim 7**, Lee teaches the driving unit being a data driver ("*data driver 10*") [fig. 1].

As to **claim 9**, Lee does not expressly teach the reference voltage generator comprising a plurality of buffers.

However, Examiner takes official notice that it is well known in the art to use buffers to amplify signals.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the reference voltage generator of Lee to include a plurality of buffers, to use the buffers to enhance the output amplitude of the signals outputted from the D/A converters included in the reference voltage generator, and to output the enhanced output signals to the driving unit, in order to allow the reference voltage generator to reduce the amount of power required for the D/A converters to output signals sufficiently high enough to drive the pixels of the display, by amplifying the signals outputted from the D/A converters with the buffers.

***Conclusion***

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to SEOKYUN MOON whose telephone number is (571)272-5552. The examiner can normally be reached on Mon - Fri (8:30 a.m. - 5:00 p.m.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sumati Lefkowitz can be reached on (571) 272-3638. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

August 03, 2009

/S. M./

Examiner, Art Unit 2629

/Amare Mengistu/

Supervisory Patent Examiner, Art Unit 2629